

MEG-00-012

Amendments to the Claims

This listing of the Claims will replace all prior versions and listings of the claims in this patent application.

Listing of the Claims

1-10. (canceled)

11. (previously presented) A method of forming a chip scale package (CSP) comprising the steps of:

providing one or more chips having I/O pads with UBM layer on the surface of said I/O pads;

5 providing a substrate comprising bismaleimide triazine (BT) and having a thickness between about 150 to 300 μm ;

applying an adhesive layer with a thickness between about 10 to 100 μm over said substrate, thus forming an adsubstrate composite;

forming openings in said adsubstrate composite to match the spacing of
10 corresponding said I/O pads of said chip;

attaching said chip(s) on said adsubstrate composite wherein said I/O pads of said chip(s) are placed on the corresponding openings on said adsubstrate composite to form a package;

forming a molding material around said package;

MEG-00-012

- 15 performing ball mounting over said openings on said adsubstrate of said package;
and
sawing said substrate to form said CSP.

12. (original) The method of claim 11, wherein said chip comprises silicon.

13. (original) The method of claim 11, wherein said I/O pads are area array (AA) type, or are redistributed to a redistribution layer to form AA I/O pads.

14. (canceled)

15. (currently amended) The method of claim 11, wherein said substrate comprises a Ball Grid Array (BGA).

16. (canceled)

17. (original) The method of claim 11, wherein said adhesive layer comprises polyimide thermocompression adhesive.

18. (canceled)

19. (original) The method of claim 11, wherein said forming said openings is accomplished by mechanical or laser drilling, or screen printing.

MEG-00-012

20. (original) The method of claim 11, wherein said openings have a diameter between about 350 to 900 μm .
21. (original) The method of claim 11, wherein said attaching said chip(s) is accomplished by subjecting said adsubstrate to a temperature between about 250 and 350 $^{\circ}\text{C}$ at a pressure between about 1.5 to 2.5 Mpascals.
22. (original) The method of claim 11, wherein said molding material comprises epoxy resin.
23. (original) The method of claim 11, wherein said molding material has a thickness between about 100 to 500 μm .
24. (original) The method of claim 11, wherein said performing said ball mounting is accomplished with a solder comprising tin-lead or tin-silver alloy.
25. (original) The method of claim 11, wherein said ball mountings have a height between about 300 to 800 μm .
26. (previously presented) A method of forming a chip scale package (CSP) comprising the steps of:
- providing a wafer having a plurality of chip sites with I/O pads;

MEG-00-012

- forming an under-ball metal (UBM) layer over said I/O pads;
- 5 forming an adhesive layer over said UBM layer on said wafer to form an adwafer;
- forming openings in said adhesive layer on said adwafer to reach said I/O pads
underlying said UBM layer;
- thereafter die sawing said adwafer to form said chip scale package (CSP)
- providing a substrate having openings corresponding to said I/O pads;
- 10 thereafter attaching said CSP with said adhesive to said substrate; and
- thereafter forming ball mountings on said openings on said substrate to attach to
said I/O pads on said CSP.

27. (original) The method of claim 26, wherein said wafer comprises silicon.

28. (original) The method of claim 26, wherein said I/O pads comprise aluminum alloy or copper.

29. (original) The method of claim 26, wherein said I/O pads are area array (AA) type, or redistributed to a redistribution layer to form AA pads.

30. (original) The method of claim 26, wherein said UBM layer comprises nickel and/or copper.

31. (original) The method of claim 26, wherein said forming said adhesive layer over said UBM layer comprises lamination, spin coating, or screen printing.

MEG-00-012

32. (original) The method of claim 26, wherein said adhesive layer comprises polyimide thermocompression adhesive.

33. (canceled)

34. (original) The method of claim 26, wherein said forming said openings comprise laser drilling, photolithography, or silk screening.

35. (original) The method of claim 26, wherein said openings have a diameter between about 250 to 750 μm .

36. (original) The method of claim 26, wherein said substrate comprises bismaleimide trizine (BT) having a thickness between about 150 to 300 μm .

37. (currently amended) The method of claim 26, wherein said substrate comprises a Ball Grid Array (BGA).

38. (original) The method of claim 26, wherein said attaching said BGA substrate to said adhesive layer is accomplished at a temperature between about 250 and 350 °C, and pressure between about 1.5 to 2.5 Mpascals.

MEG-00-012

39. (original) The method of claim 26, wherein said ball mountings comprise solder having a composition lead-tin or tin-silver.

40. (original) The method of claim 26, wherein said mounting balls have a height between about 300 to 800 μm .

41. (original) The method of claim 26, wherein said CSP is encapsulated in a molding material comprising epoxy resin.

42. (previously presented) A method of forming a chip scale package (CSP) comprising the steps of:

providing one or more chips having I/O pads with UBM layer on the surface of said I/O pads;

providing a substrate comprising bismaleimide triazine (BT) and having a thickness between 150 to 300 μm ;

applying an adhesive layer with a thickness between 10 to 100 μm over said substrate, thus forming an adsubstrate composite;

forming openings in said adsubstrate composite to match the spacing of corresponding said I/O pads of said chip;

attaching said chip(s) on said adsubstrate composite wherein said I/O pads of said chip(s) are placed on the corresponding openings on said adsubstrate composite to form a package wherein said attaching is accomplished by subjecting said adsubstrate to a temperature of between 250 and 350 $^{\circ}\text{C}$ at a pressure of between 1.5 to 2.5 Mpascals;

MEG-00-012

forming a molding material around said package;

thereafter performing ball mounting over said openings on said adsubstrate of said package; and

sawing said substrate to form said CSP.

43. (previously presented) The method of claim 42 wherein said chip comprises silicon.

44. (previously presented) The method of claim 42 wherein said I/O pads are area array (AA) type, or are redistributed to a redistribution layer to form AA I/O pads.

45. (currently amended) The method of claim 42 wherein said substrate comprises a Ball Grid Array (BGA).

46. (previously presented) The method of claim 42 wherein said adhesive layer comprises polyimide thermocompression adhesive.

47. (previously presented) The method of claim 42 wherein said forming said openings is accomplished by mechanical or laser drilling or screen printing.

48. (previously presented) The method of claim 42 wherein said openings have a diameter between about 350 and 900 μm .

MEG-00-012

49. (previously presented) The method of claim 42 wherein said molding material comprises epoxy resin.

50. (previously presented) The method of claim 42 wherein said performing said ball mounting is accomplished with a solder comprising tin-lead or tin-silver alloy.

51. (previously presented) The method of claim 42 wherein said ball mountings have a height between about 300 and 800 μm .